Defense Installation Spatial Data Infrastructure (DISDI) and the new DoD Real Propery Inventory Requirements (RPIR)

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25 May 2005
Presentation for USACE Real Estate Meeting

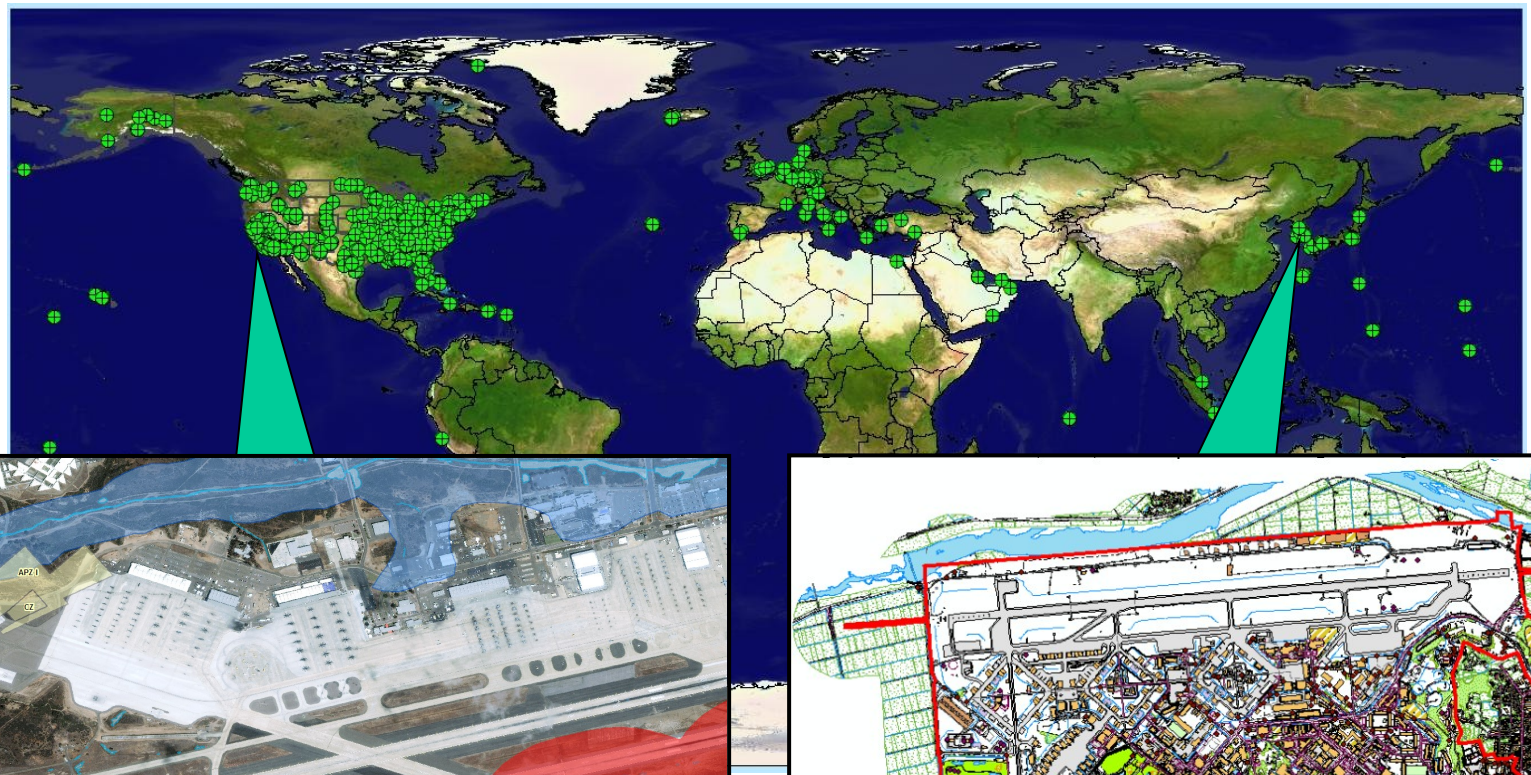
Defense Installation Spatial Data Infrastructure Program Office

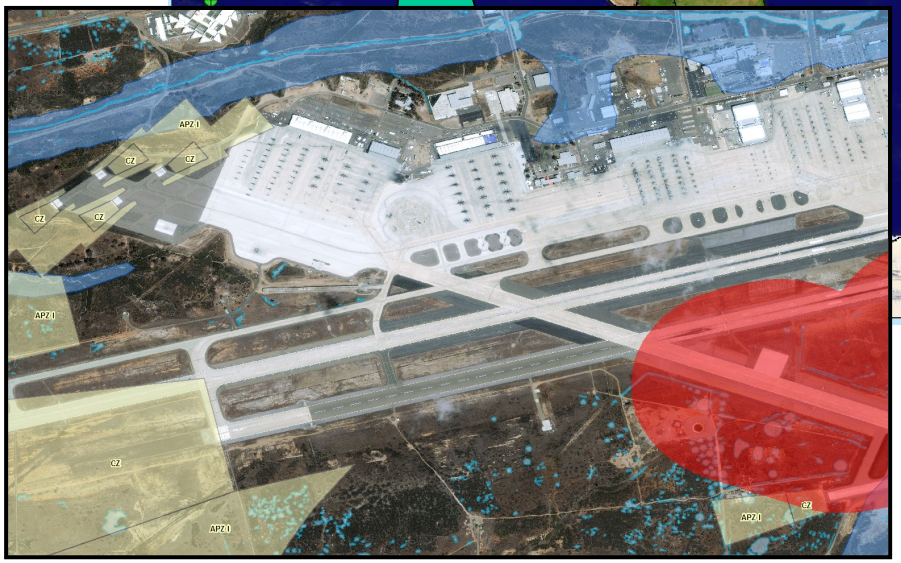
Deputy Under Secretary of Defense for Installations and Environment, Business Transformation Directorate

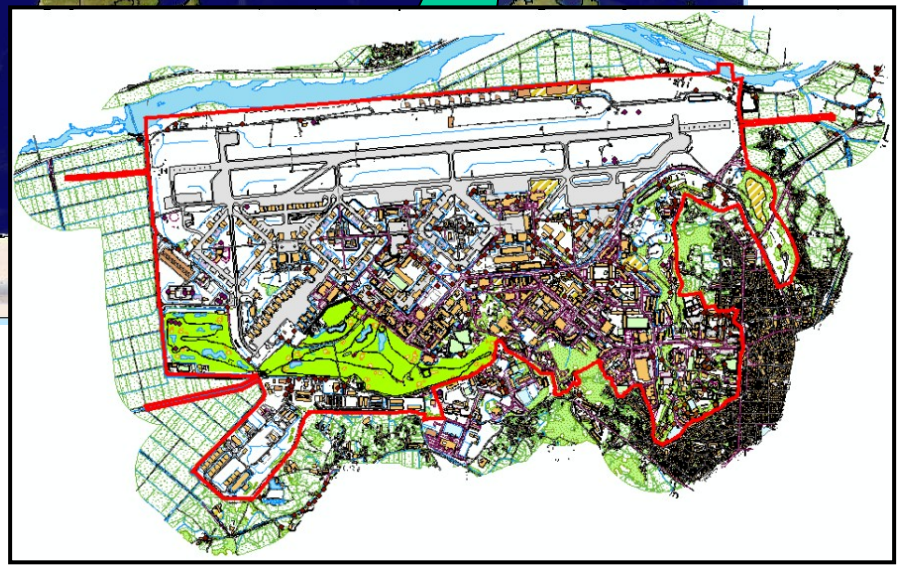
What is the Defense Installation Spatial Data Infrastructure (DISDI)?

"A DoD mission capability comprised of those people, policies, and practices necessary to optimally acquire, steward and share 'best available' installation and environmental geospatial data assets across the Global Information Grid (GIG)."

What is the DISDI?







Service Installation Mapping Programs

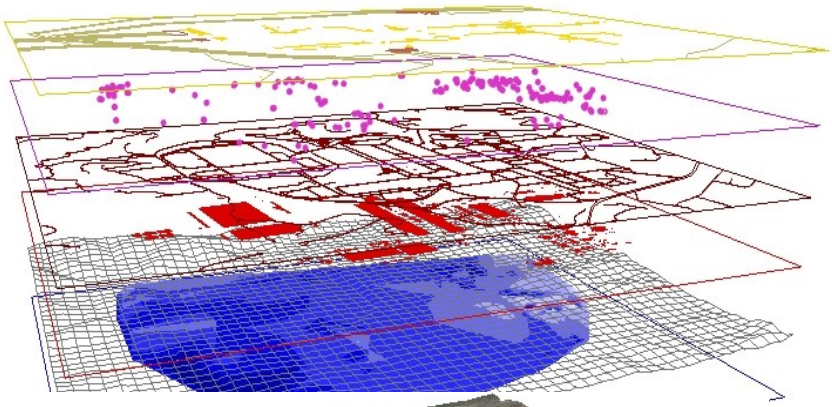
- USN GeoReadiness
- USMC GeoFidelis
- USAF GeoBase
- USA IGI&S

- Standards-based approach for all Service programs
  - Spatial Data Standards for Facilities, Infrastructure, and Environment (SDSFIE) – for organizing geospatial data
  - Federal Geographic Data Committee (FGDC) Content Standards for Digital Geospatial Metadata (CSDGM) – for documenting geospatial data

What do the Installation Geospatial Databases Include?

- **Each Service program defining a "common installation picture" that sets minimum layers to be mapped at each DoD site**
- **Currently, CADD/GIS database content vary significantly from site to site**

Utility Layer
Wells Layer
Roads Layer
Building Layer
Surface Layer
Groundwater Layer



Digital Image

Service Inventories

- **Each service currently inventorying what CADD/GIS data are present and maintained at each major installation**
- **Inventories scheduled to be completed July 05**
- **Include questions on real estate**
  - **“Do you have installation boundaries mapped?”**
  - **“Do you have parcels mapped?”**

- **Inventories are focused on what the *Services* have**
  - **What about USACE and NAVFAC real estate GIS/CADD holdings for installation boundaries and parcels?**

Why does Mapping Real Estate Matter to the DoD Services?

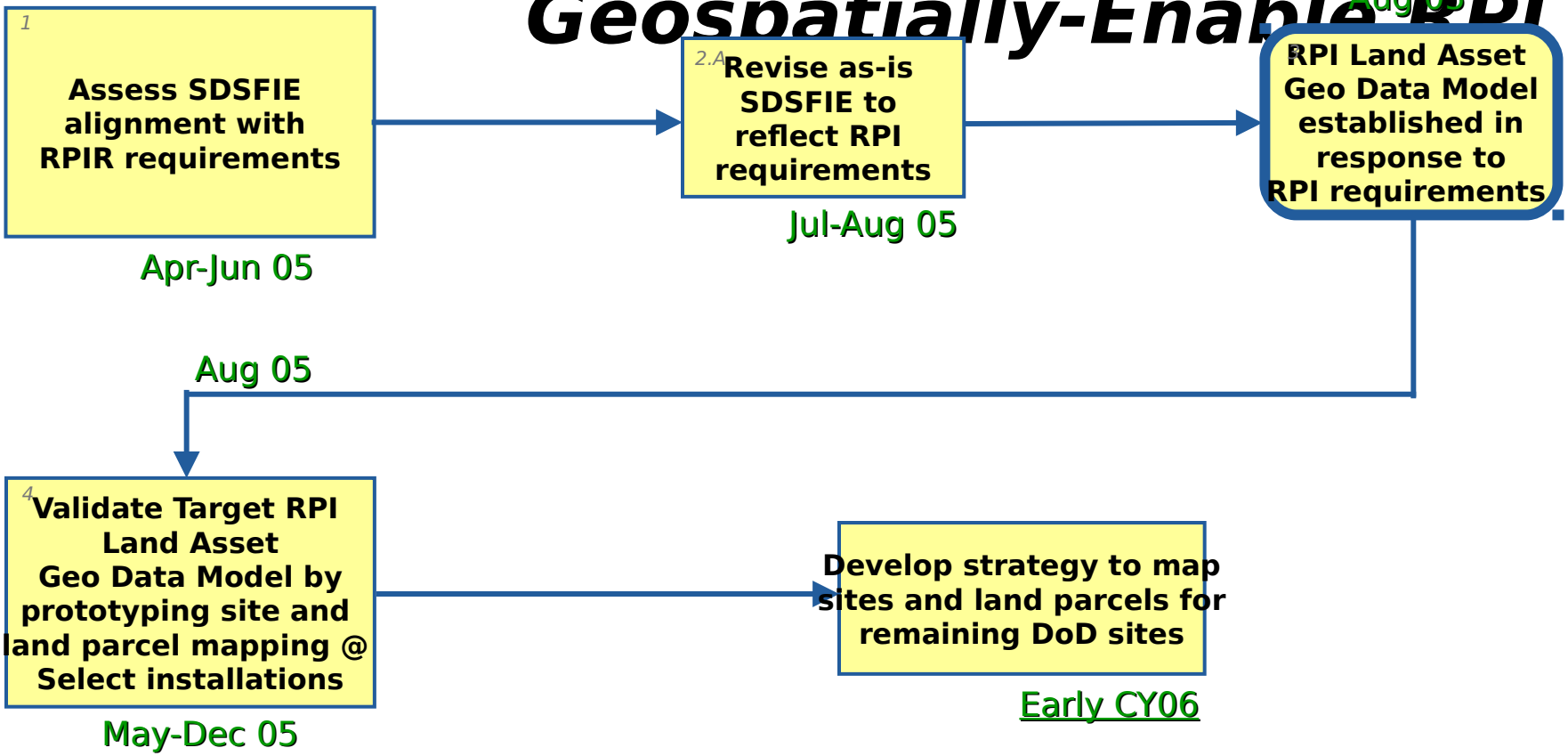
- **Jan 05 approval of the Real Property Inventory Requirements (RPIR)**
- **Upcoming issuance of the revised DoD Real Property Instruction (prior version 1977) requiring RPIR implementation**
  - **Impact on USACE Civil Works missions?**
- **Requirement to map real estate across DoD installations anticipated in FY06**
- **Anticipated impacts on Service installation mapping programs**
  - **RPUID as the new primary key for all real property/real estate**
  - **New asset taxonomy … semantics and terminology**
  - **180 core data elements**
- **Does the SDSFIE adequately address RPIR requirements?**

DoD Site Registry Goals and Schedule

- DoD establishing an “authoritative” list of all DoD owned land parcels and sites, starting this CY
- Apply new RPIR business rules to inventory and assign RPUIDs to all
  - Land parcels
  - Sites
- Store in a non-spatial DoD “Site Registry” database at OSD, with linkage to Service real estate systems
  - USAF ACES
  - Army IFS
  - Navy iNFADs
- Will include PDFs of all source documents
- Source CADD/GIS files to be inventoried
- Will entail significant involvement of USACE

DISDI CY05 Milestones and Actions

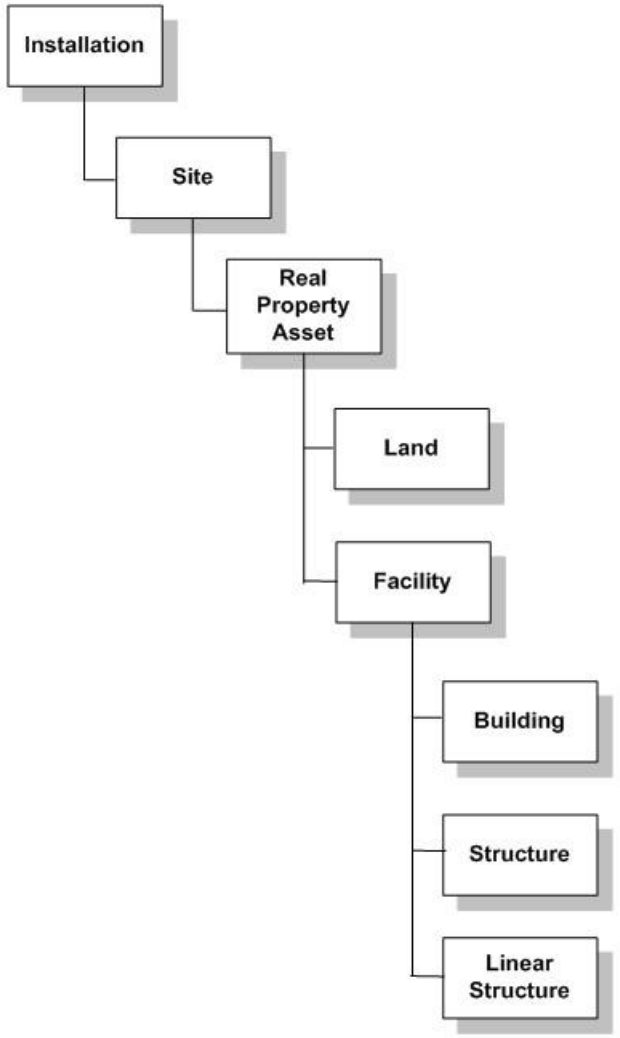
Geospatially-Enable RPI

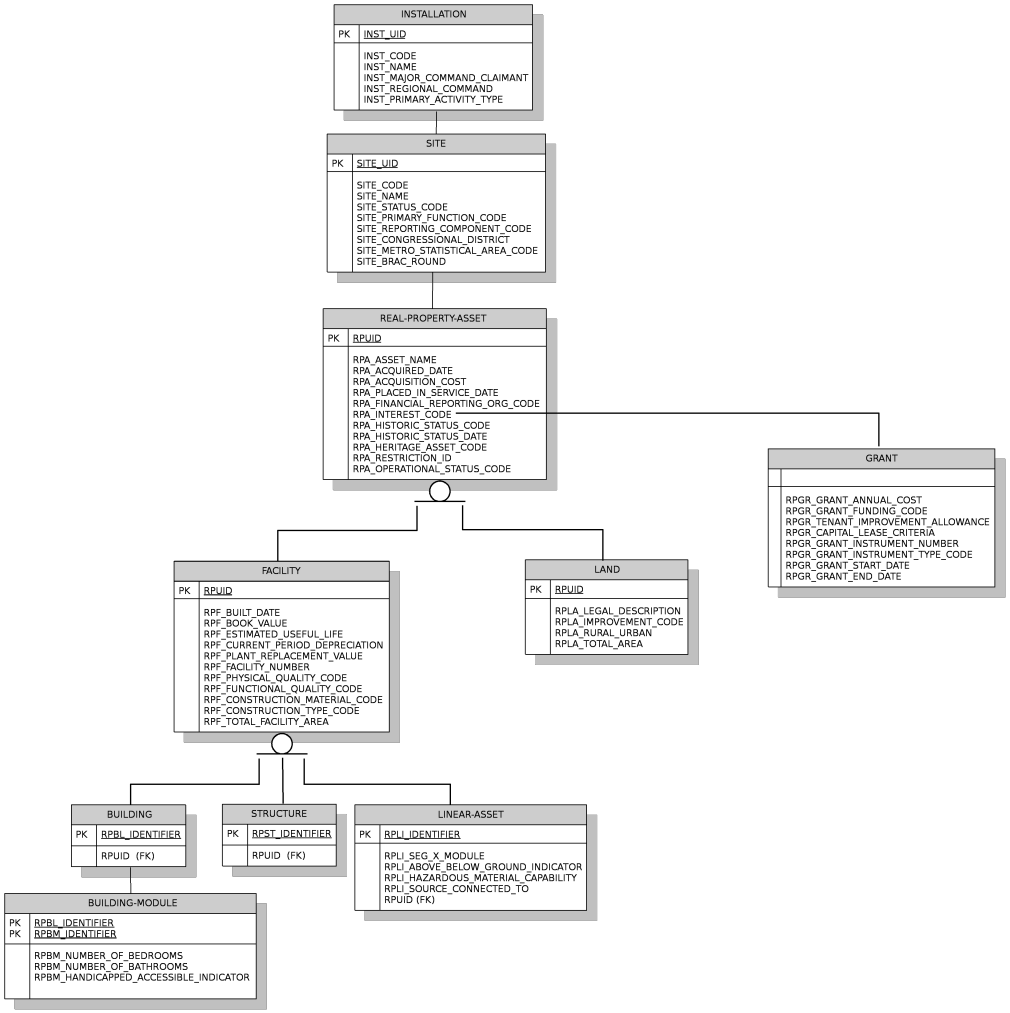

1
Assess SDSFIE alignment with RPIR requirements
Apr-Jun 05
2.A
Revise as-is SDSFIE to reflect RPI requirements
Jul-Aug 05
3
RPI Land Asset Geo Data Model established in response to RPI requirements
Aug 05
Aug 05
4
Validate Target RPI Land Asset Geo Data Model by prototyping site and land parcel mapping @ Select installations
May-Dec 05
Develop strategy to map sites and land parcels for remaining DoD sites
Early CY06

USACE and NAVFAC Real Estate teams are central to

Geospatially Enabling DoD RPI with DISDI

New Real Property Asset Taxonomy



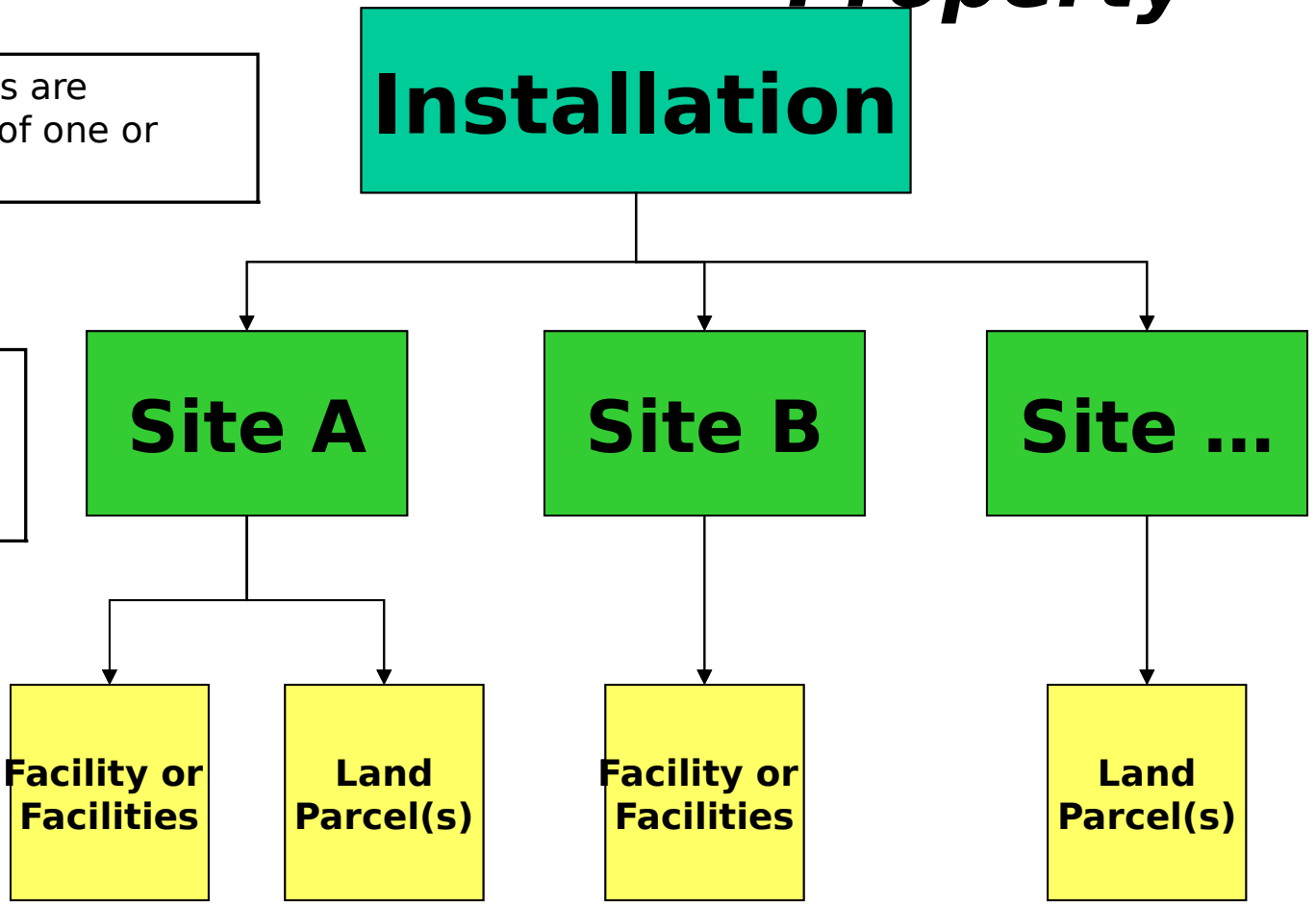


RPI Defines a New Conceptualization of "Real Property"

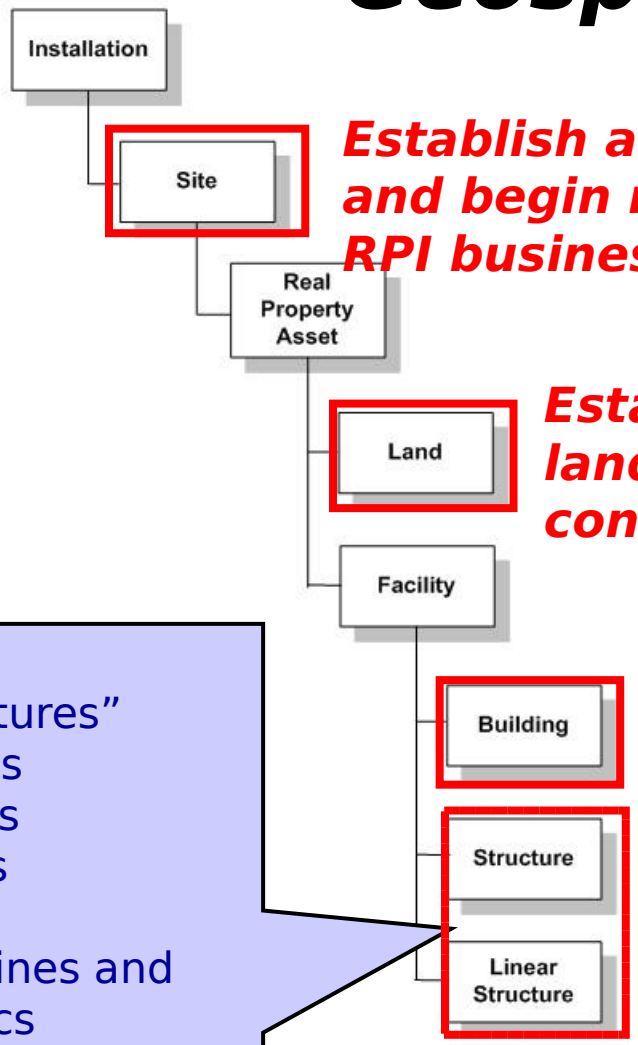
Installations are composed of one or more sites

Sites are composed of one or more parcels and/or facilities

An individual facility or parcel could also be a site; parcels and facilities are the building blocks of sites and installations.



Strategy for Implementing RPI Geospatial Data Model in SDSFIE



Establish a new "Site" data model in SDSFIE and begin mapping site boundaries using new RPI business rules

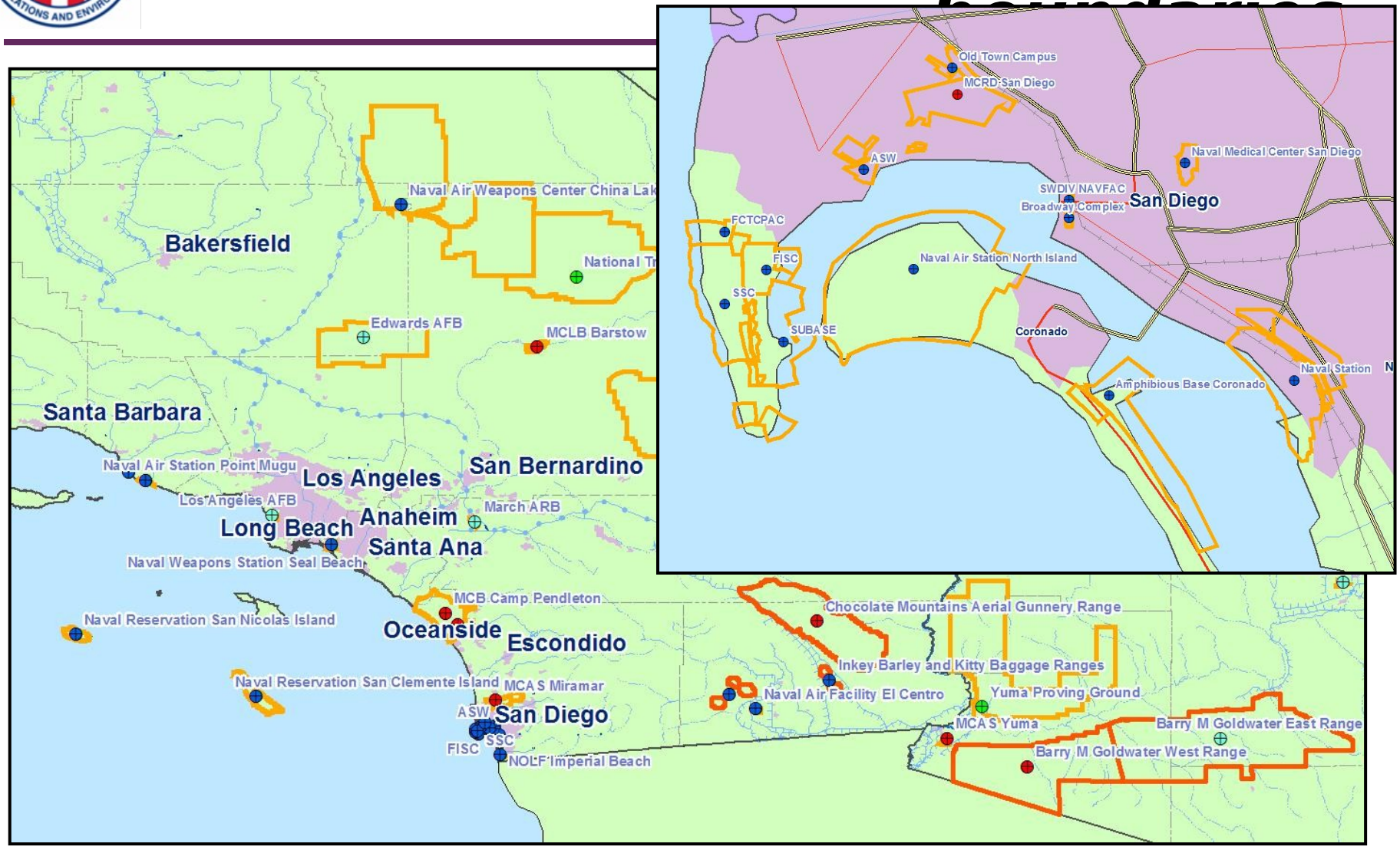
Establish a "target" data model for land (parcels) in SDSFIE and begin conversion to digital map format

Other "structures"
Utilities
Ranges
Towers
Roads
Flightlines and tarmacs
Etc.
Etc.

Establish a "target" SDSFIE data model for buildings and migrate existing buildings to the new data model

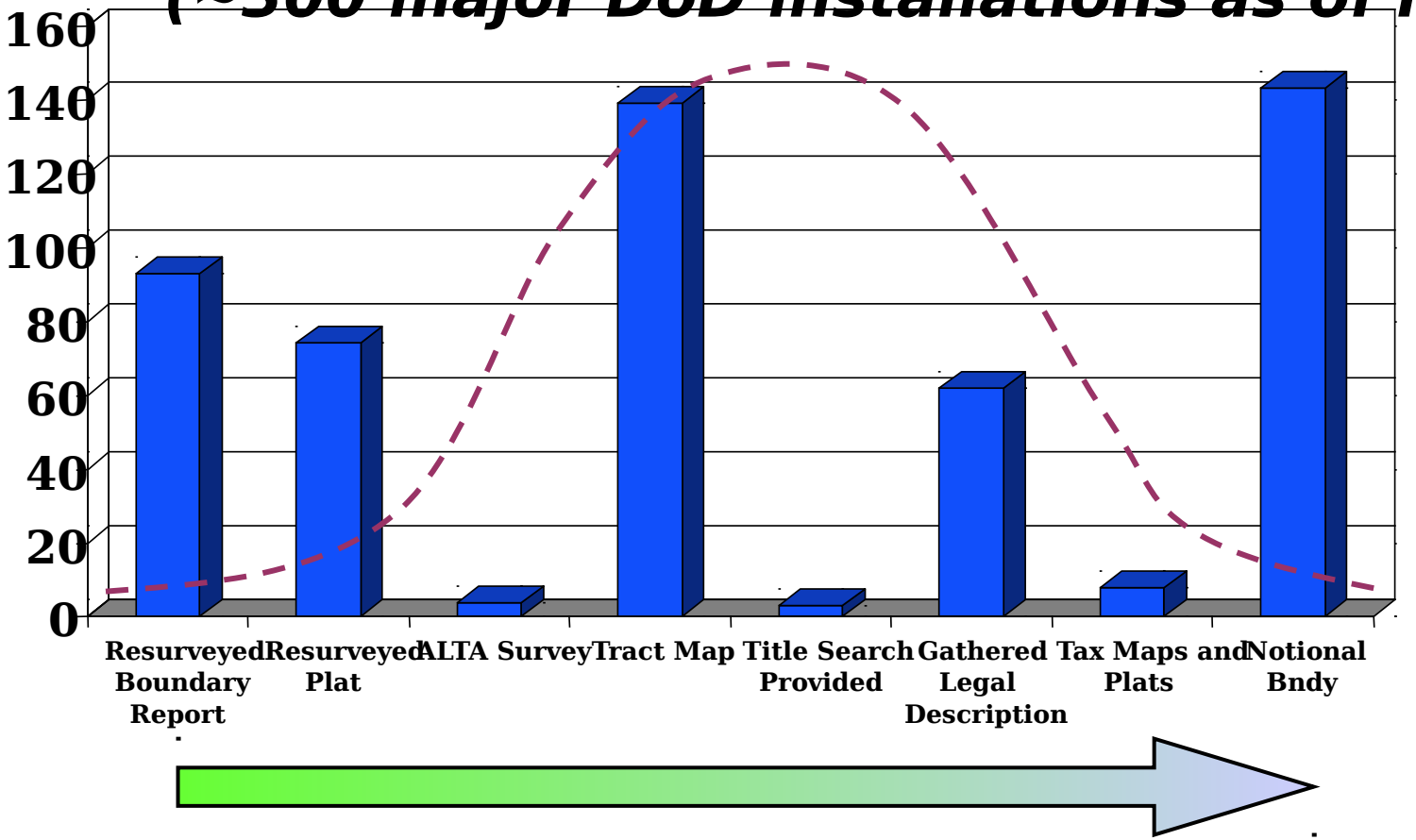
Establish "target" SDSFIE data models for structures and migrate existing Structures to the new data model

As-Is: Many "installation" boundaries



Fidelity of "as-is" Installation Boundaries

(~300 major DoD installations as of May 04)



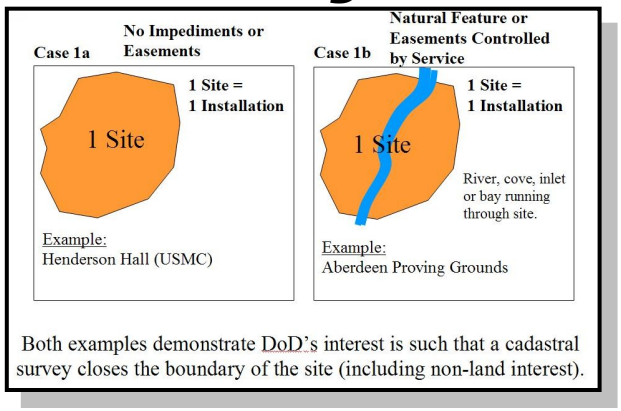
Most Preferred*

Least Preferred*

*As defined by Service real property offices prior to RPIR

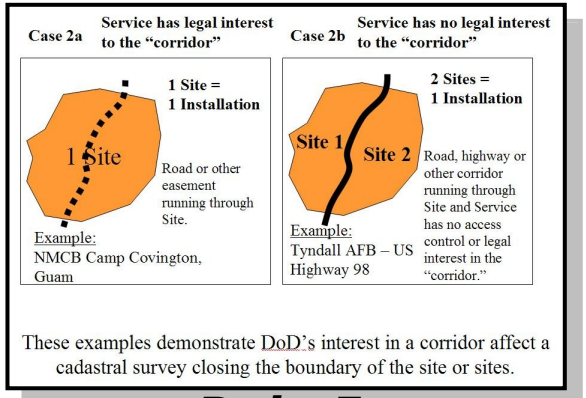
New RPI Business Rules Defining "Site Boundaries"

Rule 1: Single Sites



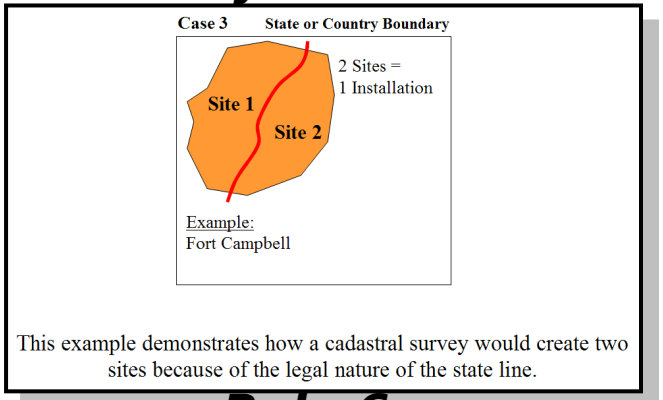
Both examples demonstrate DoD's interest is such that a cadastral survey closes the boundary of the site (including non-land interest).

Rule 2: Roads, Corridors


Case 2a
Service has legal interest to the "corridor"
1 Site
1 Site = 1 Installation
Road or other easement running through Site.
Example:
NMCB Camp Covington, Guam
Case 2b
Service has no legal interest to the "corridor"
Site 1
Site 2
2 Sites = 1 Installation
Road, highway or other corridor running through Site and Service has no access control or legal interest in the "corridor."
Example:
Tyndall AFB – US Highway 98

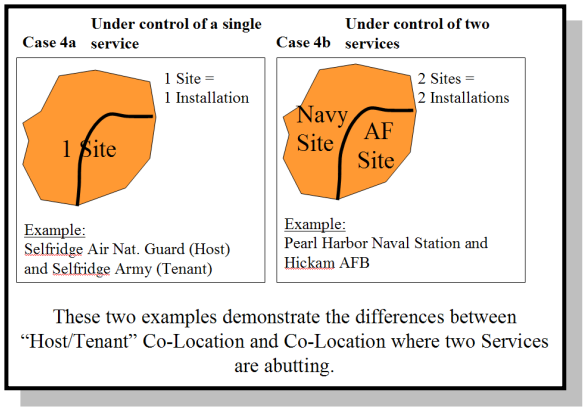
These examples demonstrate DoD's interest in a corridor affect a cadastral survey closing the boundary of the site or sites.

Rule 3: State, Country Boundaries



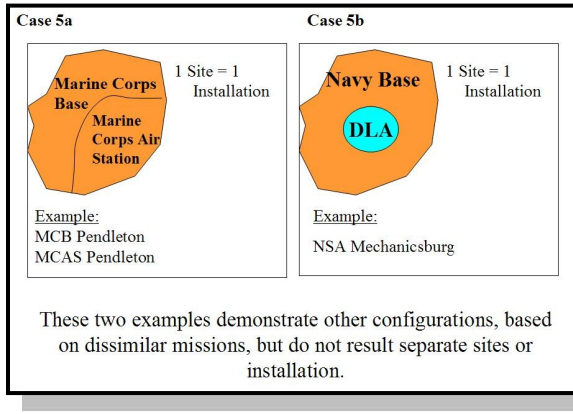
This example demonstrates how a cadastral survey would create two sites because of the legal nature of the state line.

Rule 4: Co-Location



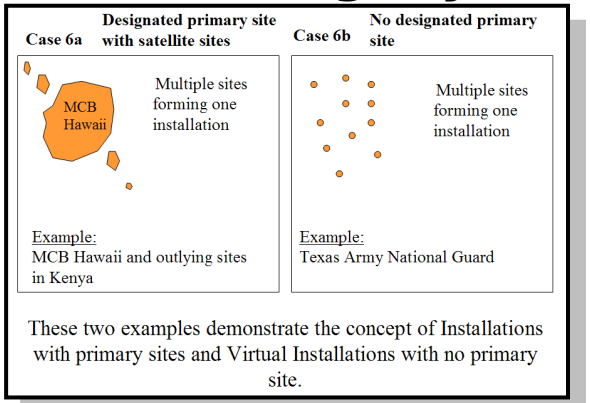
These two examples demonstrate the differences between "Host/Tenant" Co-Location and Co-Location where two Services are abutting.

Rule 5: Hosts/Tenants



These two examples demonstrate other configurations, based on dissimilar missions, but do not result separate sites or installation.

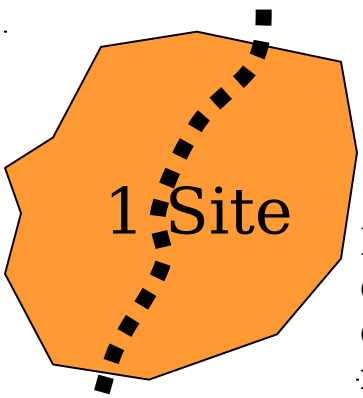
Rule 6: Noncontiguity



These two examples demonstrate the concept of Installations with primary sites and Virtual Installations with no primary site.

Case 2: Road, Highway, Corridor

Case 2a **Service has legal interest to the "corridor"**

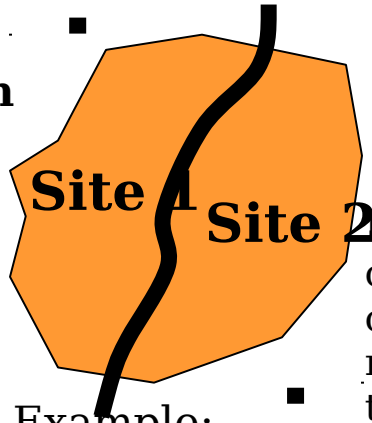


1 Site = 1 Installation

Road or other easement running through Site

Example:
NMCB Camp Covington, Guam

Case 2b **Service has no legal interest to the "corridor"**



2 Sites = 1 Installation

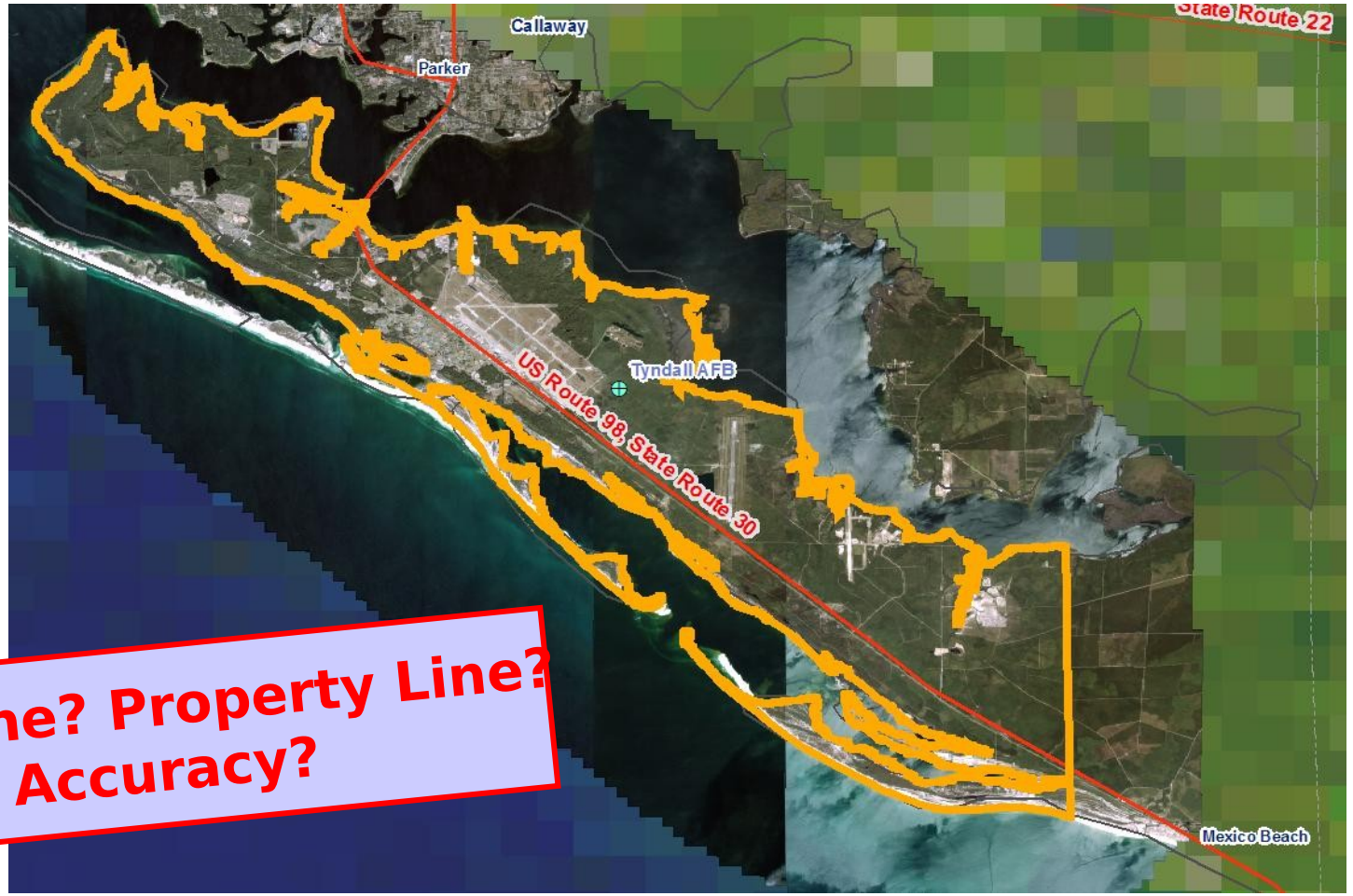
Road, highway or other corridor running through Site and Service has no access control or legal interest in the "corridor."

Example:
Tyndall AFB – US Highway 98

These examples demonstrate DoD's interest in a corridor affect a cadastral survey closing the boundary of the site or sites.

As-Is: No Standard Business Rules Applied to Map DoD "Installation Boundaries"

- Example: Tyndall AFB mapped as a single "site" with a single boundary polygon:



Fenceline? Property Line? Accuracy?

To-Be: Apply new RPIR Business Rules to Map Legal Site Boundaries

- Tyndall AFB comprised of 2 sites, each with unique RPSUID:

Site 1 with RPSUID
XXXXXXXXXXXX

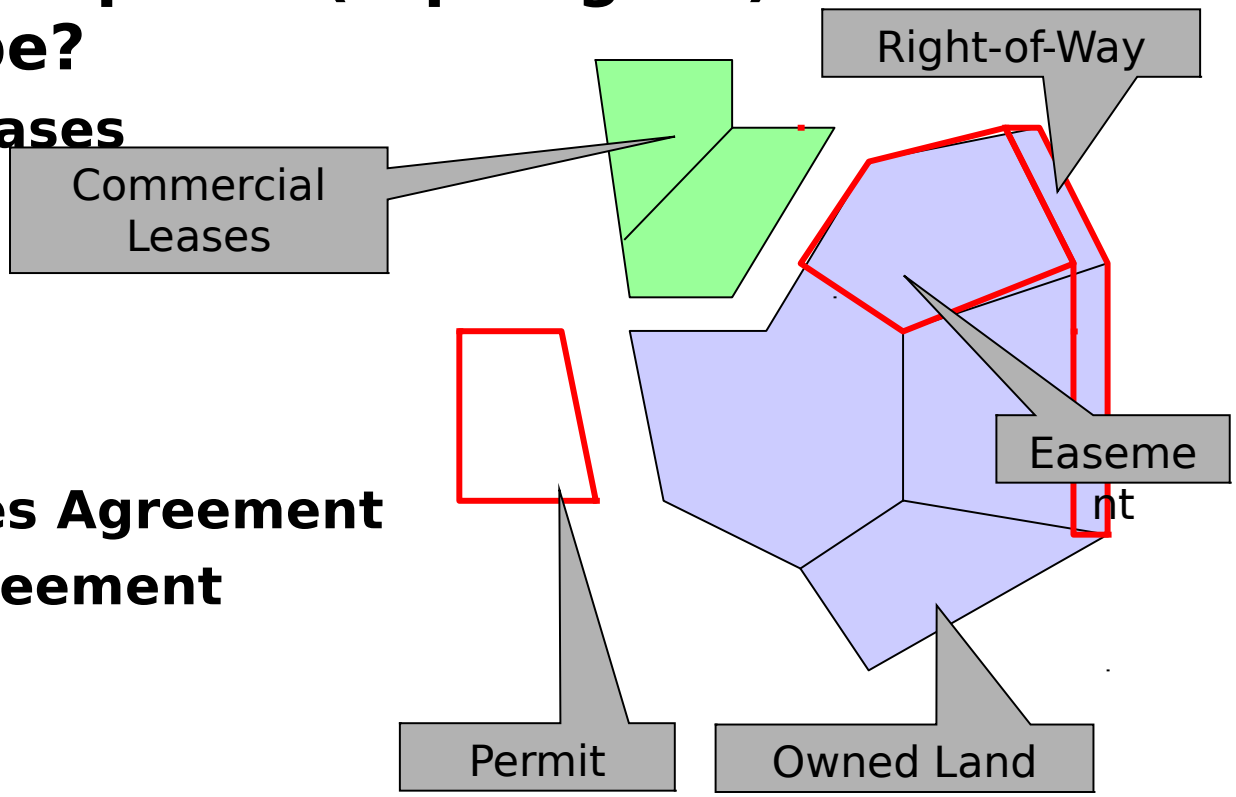
Site 2 with RPSUID
XXXXXXXXXXXX

It's not just a Matter of Applying new Site Definitions

- **Need to establish a geospatial spatial data model meeting new DoD real property requirements defined in the RPIR**
- **How well does the "as-is" SDSFIE address RPIR requirements?**
  - **Minor tweaks?**
  - **Major revisions?**
- **Some examples of issues to be addressed …**

"Land Parcel" Geo-Data Model Must Address RPIR "Non-Owned Land" Taxonomy

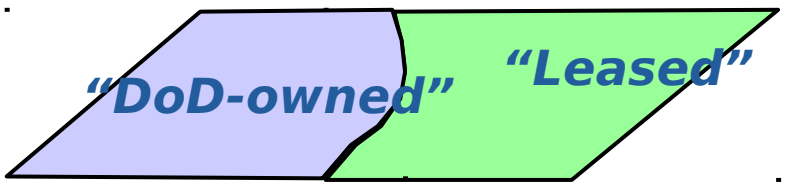
- **Which of these conveyance vehicles defined in the RPIR can have a geospatial component, and**
- **What would the spatial (topological) relationships be?**
  - **Commercial Leases**
  - **Permits**
  - **Licenses**
  - **Easements**
  - **Rights of entry**
  - **Status of Forces Agreement**
  - **Occupancy Agreement**



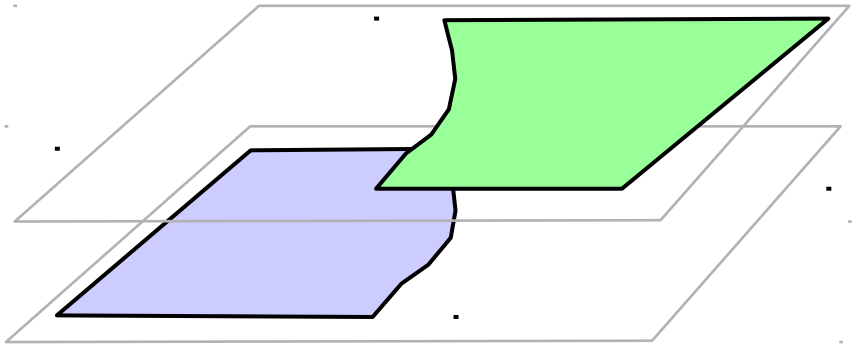
Challenges with the "as-is" SDSFIE Cadastral Data Model – An Example

- **Leases**
  - **Separate entity type (map layer) from owned lands, or**
  - **simply a "type" of land status attributed in a single entity type (map layer) to be distinguishable from "owned" land?**

Entity Type "parcel_area"



vs.



Single Entity Type

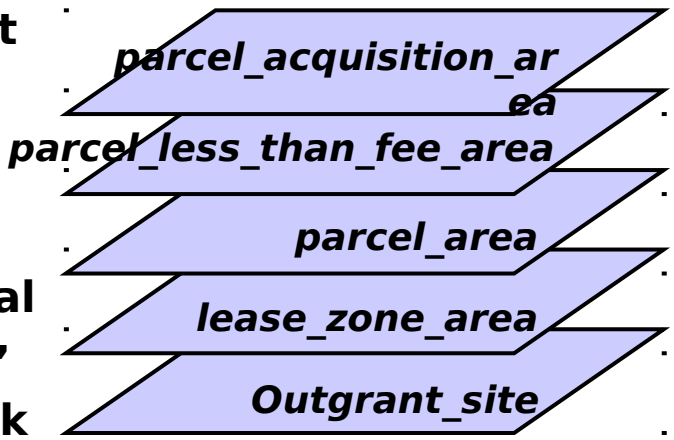
"parcel_area" with a attribute domain distinguishing DoD-owned vs. leased land parcels?

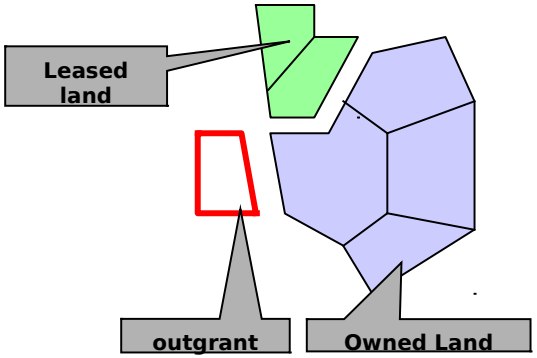
Two Entity Types:

"lease_zone_area" for leased parcels and "parcel_area" for owned parcels?

Challenges with the "as-is" SDSFIE Cadastral Data Model – Another Example

- "parcel_acquisition_area" (definition: "Tract boundaries for all land obtained in parcel acquisitions (fee and less-than-fee")
- "parcel_less_than_fee_area" (definition: "Parcel boundaries for all land obtained in less-than-fee acquisitions")
- "parcel_area" (definition: "A single cadastral unit, which is the spatial extent of the past, present, and future rights and interests in real property and the geographic framework to support the description of the spatial extent.")
- "lease_zone_area" (definition: "A parcel of land leased by an individual, agency, or organization for their use.")
- "outgrant_site" (definition: "The outside boundary or point location of all land outgrants.")
- **Should these be combined into a single Entity Type, to ensure non-overlapping spatial objects, and distinguish using attribute domains?**





Apr-July 05 Service Assessment of SDSFIE – RPIR Alignment

- OSD performing an initial assessment
- Results to be vetted with Services and with USACE
  - USACE Real Estate
  - CADD-GIS Technology Center
  - Alignment with CADD-GIS Technology Center findings?
- With Service/USACE Concurrence, necessary revisions would be made to SDSFIE
  - Submitted to CADD-GIS Technology Center this year
  - Incorporated into future SDSFIE release (beyond Oct 05)
- Revised SDSFIE data model to be “tested” at select installations this CY

Apr-July 05 Service Assessment of SDSFIE – RPIR Alignment - *Scope*

- **Focus is on "land" aspects of the RPIR**
- **Objective assessment of how well SDSFIE aligns with RPIR "land" requirements**

Tasks:

1. **Identify high-level "target" to-be DoD RPI geospatial land data model elements**
   - **ID each required geospatial object/layer**
   - **Including the spatial/topological relationships between each object type/layer**
2. **SDSFIE alignment with "target" DoD RPI data model**
   - **Recommend necessary changes to the SDSFIE to meet RPI requirements**
     - New entity types
     - Modified existing entity types
     - Revisions to attribute fields and domain values

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Mr Daniel Feinberg

Presentation for USACE Real Estate Meeting

May 2005

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